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| 10/549,411 | 12/21/2005 | Katsuaki Nakamura | F-8809 | 1648 |

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| EXAMINER | |
|---|---|
| YANG, JIE | |
| ART UNIT | PAPER NUMBER |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/549,411 | NAKAMURA ET AL. | |
| | Examiner | Art Unit | |
| | JIE YANG | 1793 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *30 April 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *3,4,26,27,36-38 and 86* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3,4,26,27,36-38 and 86* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

Claims 3, 4, 26, 27, and 36-38 are amended; claims 1, 2, 5-25, 28, 35, and 39-85 are cancelled, claim 86 is added as new claim, and claims 3, 4, 26, 27, 36-38, and 86 remain for examination.

### *Claim Rejections - 35 USC § 102*

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 3, 4, 26, 36, and 38 are rejected under 35 U.S.C. 102(b) as anticipated by Nakamura (JP 2001-321825 with machine English translation, thereafter JP'825).

Regarding the independent claim 38 and dependent claim 3, JP'825 teaches a working method by which large strain is added and average grain size is micronized by applying large shear deformation to a metallic material and only a part to which the shear deformation is applied is heated (Abstract, Fig.1-5 of JP'825), which reads on the limitations of turning the metal structure of the metal body into a finer grain structure by locally shearing as recited in the instant claim 38. JP'825 teaches guiding and rolling forging the metallic material before and after locally shearing operation (Fig.1-5, paragraphs [0028]-[0031] of JP'825), which reads on the non-low deformation resistance region is formed along at least one side periphery of

the low deformation resistance region as recited in the instant claims 38 and 3.

Still regarding claim 38, JP'825 teaches rotation forge may be used for the process (paragraph [0028] of JP'825), which reads on the rotational motion to the non-low deformation resistance region as recited in the instant claim.

Regarding claim 4, JP'825 teaches cooling for the not heating part of metallic mold (paragraphs [0022]-[0025] of JP'825), which reads on the cooling means as recited in the instant claim.

Regarding claim 36, JP'825 teaches non-low deformation regions sandwich the low deformation region (Fig.5 and abstract of JP'825), which meets the limitation of the instant claim. Because JP'825 teaches the similar locally heating, searing, guiding and rolling forging the metallic material before and after locally shearing operation (Fig.1-5, paragraphs [0028]-[0031] of JP'825) as recited in the instant invention, therefore, the limitation that: the fluctuated relative to another non-low deformation resistance region is fluctuated thus deforming the low deformation resistance region by searing would inherently exist in the process of JP'825. MPEP 2112 III&IV.

Regarding independent claim 26, which includes the similar turning and forming limitations as recited in the instant claim 38, the corresponding rejections can refer to the rejection for the instant claim 38. Regarding the limitation of aging treatment by maintaining the metal body at a temperature which does not turn the metal structure into coarser grain structure in locally lowering the deformation resistance, JP'825 teaches that the fine grain metal samples have been pull test under 400°C with remarkable ductility improvement (Paragraph [0027] of JP'825), which meets the limitation of the instant claim because it is a common knowledge that the microstructure of the metal structure strongly relates to the properties of the metal, the high ductility may correspond to a non-coarse grain structure. This position can further refer to the evidence reference Rosales et al (US 3,794,528).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP'825 in view of Ozawa (US 6,742,374 B2, thereafter, US'374).

Regarding claim 27, JP'825 does not specify carburizing treating the metal body (claim 27). However, carburizing treating technique is conventional in the art as evidenced by US'374. US'374 teaches a method of partly reinforcing a workpiece (Abstract of US'374). US'374 teaches the reinforcement-requiring part of the workpiece that has been heated up to a high temperature upon contacting with the forming surface of the forming die makes it possible to partly reinforce the reinforcement-requiring part (Col.5, lines 11-30 of US'374). US'374 further teaches the heating can be performed in different gas atmospheres, for example, in carbon-included gas such as CO gas atmosphere (Example 1 of US'374), which would result in the carburization as recited in the instant claim 27. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the conventional techniques, such like carburizing (claim 27) in the process of JP'825 as demonstrated by US'374 in order to obtain desired reinforcement on the reinforcement-requiring part of the workpiece (Abstract and Col.5, lines 11-30 of US'374).

Claims 37 and 86 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP'825 in view of McMaster (US 3,534,574, thereafter, US'574).

Regarding independent claims 37 and 86, JP'825 does not specify a vibratory motion for the forming. However, the vibratory motion for the forming is a conventional technique in the art as evidenced by US'574. US'574 teaches a method of locally reducing a deformation resistance of a metal body by heating and vibration (Col.4, lines 35-41 of US'574) in order to form a low deformation resistance region that is subjected to shear by the rollers. US'574 further teaches that by controlling a vibration input a heated zone (low deformation region) can be moved in direction along the metal body (Col.5, lines 20-35 of US'574). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the conventional technique of the vibratory motion for the forming in the process of JP'825 as demonstrated by US'574 in order to improve the mechanical properties of the workpiece (Col.4, lines 35-41 of US'574).

JP'825 teaches non-low deformation regions sandwich the low deformation region (Fig.5 and abstract of JP'825), which meets the limitation of creating first and second non-low deformation resistance regions and the low deformation region being

interposed between them as recited in the instant claim 86. Regarding the similar searing, forming limitations as recited in the instant claim 38, the corresponding rejections can refer to the rejection for the instant claim 38.

***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 3, 4, 26, 27, 36-38, and 86 are rejected on the ground of nonstatutory obviousness type double patenting as being unpatentable over claims 1-20 of copending application No. 12/002,951.

Although the conflicting claims are not identical, they are not patentable distinct from each other because the claims 1-20 of copending application No. 12/002,951 teach the similar method of working a metal by locally heating to form the low deformation resistance region as disclosed in the instant claims. Thus, no patentable distinction was found in the instant claims compared with claims 1-20 of copending application No. 12/002,951.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 3, 4, 26, 27, 36-38, and 86 are rejected on the ground of nonstatutory obviousness type double patenting as being unpatentable over claims 1-35 of copending application No. 10/529,807.

Although the conflicting claims are not identical, they are not patentable distinct from each other because the claims 1-35 of copending application No. 10/529,807 teach the similar method of working a metal, wherein a low deformation resistance region, which deformation resistance is locally reduced, is formed in a metal body, and the low deformation resistance region is subjected to shear deformation thereby to fine the

microstructure of the metal body as disclosed in the instant claims. Thus, no patentable distinction was found in the instant claims compared with claims 1-35 of copending application No. 10/529,807.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Response to Arguments***

Applicant's arguments filed on 4/30/2009 have been fully considered but they are not persuasive. Regarding the arguments related to the amendments, the Examiner's position is stated as above.

In the remarks, applicant argues:

1) JP'825 does not describe or suggest the application of aging treatment in the instant claim 26.

2) JP'825 does not teach the rotational motion as recited in the instant claims. In the event the pending claims are again rejected based on the cited references, the Examiner is requested to set forth the relevant teachings in the context of the entire disclosure of the cited reference.

3) Ozawa (US'374) does not provide the teaching for the independent claim 38.

4) JP'825 does not teach vibration motion and second reference McMaster (US'574) has nothing to do with the actual deformation.

In response,

Regarding the argument 1), the Examiner notes the Applicant claims a general metal with general aging treatment in the instant claim 26 and there is no specific limitation for the aging temperature and time period. Therefore, a metal body kept at room temperature can also be treated as aging process. The Examiner further notes JP'825 teaches that the fine grain metal samples have been pull test under 400$^{o}$C with remarkable ductility improvement (Paragraph [0027] of JP'825), which meets the limitation of the instant claim 26.

Regarding the argument 2), JP'825 teaches rotation forge may be used for the process (paragraph [0028] of JP'825), which reads on the rotational motion to the non-low deformation resistance region as recited in the instant claim.

Regarding the arguments 3 and 4, the applicant's arguments are against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); In re Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In the instant case, JP'825 in view of US'374 is applied to independent claim 27 and JP'825 in view of US'574 is applied to the instant claims 37 and 86. Because the Applicant claims a general formed metal, both US'374 and US'574

teach the treating and forming the metal parts, which provide good motivation for the combination of the prior arts US'374 or US'574 with JP'825.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Rosales et al (US 3,794,528) teaches the relationship between the properties of alloy with the aging temperature, and teaches that the grain size of the alloy relates to the aging parameters (Col.6, line 56 to Col.8, line 39).

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jie Yang whose telephone number is 571-2701884. The examiner can normally be reached on IFP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-2721244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JY

/Roy King/

Supervisory Patent Examiner, Art Unit 1793